

**CLAIMS**

The invention I claim is:

1. A method for managing network resources in a communications system having a packet switch and a network access node with a limited number of channels for communicating with remote user devices, the method comprising:
  - 5 assigning a priority to a first remote user device;
  - receiving a request for service for the first remote user device;
  - retrieving the priority for the first remote user device;
  - ascertaining if any channel of the network access node for the first remote user
  - 10 device is idle;
    - if a channel is idle,
      - allocating the channel for the first remote user device; and
    - if all channels are busy,
      - placing the request for service for the first remote user device in a
  - 15 queue;
    - ordering the queue based on priorities of the remote user devices in the queue; and
    - when one of the channels becomes idle, allocating the idle channel to the remote user device at the head of the queue.
- 20 2. The method of Claim 1, further comprising:
  - prior to placing the request for service for the first remote user device in the queue, determining whether a second remote user device using one of the network access node has a priority lower than the first remote user device;

if the second remote user device has a lower priority than the first remote user device, then terminating the call of the second remote user device; and  
allocating the channel of the second remote user device to the first remote user device.

5

3. The method of Claim 1, further comprising:

if priority of another remote user device is higher than the first remote user device, storing data associated with the request for service for the first remote user device until a channel is available for the first remote user device.

10

4. The method of Claim 3, further comprising:

when one of the channels is available for the first remote user device, forwarding the stored data to the first remote user device.

15

5. The method of Claim 1, wherein placing the request for service for the first remote user device in a queue, further comprises:

notifying a caller from a remote user device associated with the request for service that the request for service has been queued.

20

6. The method of Claim 2, wherein prior to terminating the call of the second remote user device, further comprises:

notifying the second remote user device that the call of the second remote user device is being terminated.

7. The method of Claim 2, wherein determining whether a second remote user device using a channel of the network access node has a priority lower than the first remote user device, further comprises:

5 determining a priority based on a duration of the second remote user device's call.

8. The method of Claim 2, wherein upon terminating the call of the second remote user device, a request for service for the second remote user device is placed in the queue for connection when an idle channel becomes available.

10

9. The method of Claim 1, wherein receiving a request for service at the packet-based switch for a first remote user device, comprises:

15 determining whether the request for service is a voice call or a data call; and assigning a higher priority to the first remote user device when the request for service is a voice call.

10. A method for managing network resources in a communications system having a packet switch and a network access node with a limited number of channels for communicating with remote user devices, the method comprising:

- receiving a request for service for a broadcast call;
- 5 assigning a higher priority to the request for service for a broadcast call;
- ascertaining if any channel at the network access node of a first remote user device is idle;
- if all channels are in use:
  - queuing a call of another remote user device with a lower priority than a 10 first remote user device; and
  - allocating the channel of the other remote user device to the first remote user device.

11. The method of Claim 10, further comprising:
- 15 if another remote user with a priority lower than the first remote user device is not found, placing the request for service for the first remote user device in a queue;
  - ordering the queue; and
  - when a channel becomes idle, allocating that idle channel to a remote user device at the head of the queue.

- 20
12. The method of Claim 10, wherein the request for service for a broadcast call is selected from a group consisting of: an emergency call, and an emergency services call.

13. A method for storing and forwarding data in a communications system having a packet switch and a network access node with a limited number of channels for communicating with remote user devices, the method comprising:

- assigning a priority for each remote user device;
- 5 receiving a request for service for a first remote user device;
- retrieving the priority for the first remote user device; and
- determining whether the request for service is for a data call;
  - if the request for service is for a data call, determining whether to store incoming data associated with the data call; and
  - 10 if incoming data associated with the data call is stored, terminating the data call connection.

14. The method of Claim 13, wherein determining whether to store incoming data associated with the data call, further comprises:

- 15 estimating a length of time before one of the channels is available for the first remote user; and
  - if the length of time exceeds a predetermined time, storing the incoming data associated with the data call.

20 15. The method of Claim 13, further comprising:

- if the request for service is for a voice call, ascertaining an availability of any of the channels for the first remote user device;
- if one of the channels is idle,
- allocating the channel to the first remote user device;
- 25 if all channels are busy,

comparing the priority of the first remote user device with the priority  
of another remote user device;

if the priority of another remote user device is lower than the first  
remote user device,

5                   allocating the channel of the other remote user device to the first  
remote user device;

if the priority of another remote user device is higher than the first  
remote user device, queuing the request for service until one of the channels is idle,  
then allocating the channel for the first remote user device; and

10                  if the request for service is for a data call, fowarding the stored  
incoming data associated with the data call to the first remote user device.

16. A communications system having a switch adapted to handle data and voice calls, a network access node with a limited number of channels for communicating with remote user devices, the switch comprising:

a memory associated with a database in which a priority for each remote user  
5 device is stored; and

a node controller operatively connected to the memory and adapted to control  
the switch, wherein the node controller:

ascertains an availability of the limited number of channels at the  
network access node;

10 receives a request for service at the switch for a first remote user device;  
retrieves the priority for the first remote user device;

if none of the channels are idle:

places the request for service for the first remote user device in a  
queue;

15 orders the queue based on the priority of the remote user devices  
in the queue; and

when one of the channels becomes idle, allocates that idle  
channel to the remote user device at the head of the queue.

20 17. The communications system of Claim 16, wherein the node controller is  
further adapted to:

prior to placing the request for service for the first remote user device in a  
queue, search for a second remote user device with a priority lower than the first  
remote user device among the remote user devices that are using the channels at the  
25 access node;

if the node controller finds a second remote user device with a priority lower than the first remote user device, terminate the call of the second remote user device; and

allocate the channel of the second remote user device to the first remote user  
5 device.

18. The communications system of Claim 16, wherein the first remote user device is assigned multiple channels with one or more priorities.

10 19. The communications system of Claim 16, wherein the node controller is further adapted to search for the second remote user device based on the duration of the second remote user device's call.

15 20. The communications system of Claim 16, where upon termination of the call of the second remote user device, the node controller is further adapted to place a request for service for the second remote user device in the queue for connection when the idle channel becomes available.

21. The communications system of Claim 16, wherein the switch further  
20 comprises a buffer for receiving and storing inbound data when the request for service for the first remote user device includes transmitting the data to the first remote user device, wherein the inbound data is stored in the buffer until the first remote user device is assigned an idle channel and the inbound data is transmitted to the first remote user device from the buffer when the first remote user device is assigned the  
25 idle channel.

22. The system of Claim 16, wherein the switch is a packet-based switch.

23. In a communications system having a switch adapted to handle a data or a voice call, a network access node with a limited number of channels for communicating with remote user devices, the switch comprising:

5           a memory associated with a database in which a priority for each remote user device is stored; and

              a node controller operatively connected to the memory and adapted to control the functions of the switch, wherein the node controller:

              receives a request for service at the switch for a first remote user device;

10           ascertains if any channel at the access node of the first remote user device is idle;

              if none of the channels are idle:

              searches for a second remote user device with a priority lower than the first remote user device among the remote user devices that are using the channels at the 15 access node;

              if a second remote user device with a priority lower than the first remote user device is found, terminates the call of the second remote user device; and

              allocates the channel of the second remote user device to the first remote user device.

20

24. The communications system of Claim 23, wherein the node controller is further adapted to:

              if a second remote user device with a priority lower than the first remote user device is not found, establish a queue and places the request for service for the first 25 remote user device in the queue;

order the queue; and

when one of the channels becomes idle, allocate that idle channel to a remote user device based on the order of the queue.

5           25. The communications system of Claim 23, wherein the first remote user device is assigned multiple channels with one or more priorities.

10          26. The communications system of Claim 23, wherein the node controller is adapted to search for the second remote user device based on the duration of the second remote user device's call.

15          27. The communications system of Claim 23, where upon termination of the call of the second remote user device, the node controller is adapted to place a request for service for the second remote user device in the queue for connection when the idle channel becomes available.

20          28. The communications system of Claim 25, wherein the node controller is further adapted to order the queue based on the priority of the remote user devices in the queue.

25          29. The communications system of Claim 23, wherein the node controller is further adapted to order the queue based on the priority of the remote user devices in the queue.

30. The communications system of Claim 23, wherein the switch further comprises a buffer for receiving and storing inbound data when the request for service for the first remote user device includes transmitting the data to the first remote user

device, wherein the inbound data is stored in the buffer until the first remote user device is assigned the idle channel and the inbound data is transmitted to the first remote user device from the buffer when the first remote user device is assigned the idle channel.